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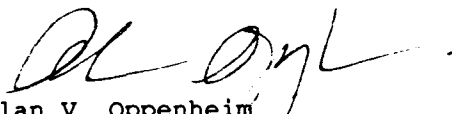
April 17, 1992

Group Leader-Information Sciences
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Office of Naval Research
Department of the Navy
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During the period of April 1, 1991, through March 31, 1992, our research activities focussed on continuing work on symbolic signal processing, new algorithms for signal analysis, and new signal representations based on wavelet analysis.

Our work on this contract during the past year has been reported in detail in the technical literature through technical reports, conference proceedings, and journal articles. Copies of these reports have been provided to the contract monitor and other offices as specified in the contract. Additional copies are available on request.

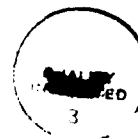
Sincerely yours,


Alan V. Oppenheim
Distinguished Professor
of Electrical Engineering

AVO/dag

Encl.

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Articles Submitted for Publication or To Be Published

- [1] Paul E. Beckmann and Bruce R. Musicus, "Fast Fault-Tolerant Digital Convolution via a Winograd Algorithm", submitted to IEEE Trans. on Signal Processing.
- [2] Ehud Weinstein, Meir Feder, and Alan V. Oppenheim, "Multi-Channel Signal Separation Based on Decorrelation", submitted to IEEE Trans. on Signal Processing.
- [3] Gregory W. Wornell, "Wavelet-Based Representations for the 1/f Family of Fractal Processing", submitted to Proceedings of the IEEE-Special Section on Applications of Fractals in Electrical Engineering.
- [4] Daniel T. Cobra, Alan V. Oppenheim, and Jules J. Jaffe, "Geometric Distortions in Side-Scan Sonar Images: A Procedure for Their Estimation and Correction", submitted to the IEEE Journal of Oceanic Engineering.

Published Articles

- [5] Paul E. Beckmann and Bruce R. Musicus, "Fault-Tolerant Round-Robin A/D Converter System", IEEE Trans. on Circuits and Systems, Vol. 38, No. 12, December 1991, pp. 1420-1429.
- [6] Paul E. Beckmann and Bruce R. Musicus, "A Group-Theoretic Framework for Fault-Tolerant Computation", Proceedings, ICASSP-92, March 23-26, 1992, San Francisco, CA.
- [7] Michele Covell and John Richardson, "A New, Efficient Structure for the Short-Time Fourier Transform, With an Application in Code-Division Sonar Imaging", Proceedings, International Conference on Acoustics, Speech, and Signal Processing, ICASSP-91, May 14-17, 1991, Toronto, Ontario, Canada, pp. 2041-2044.
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- [10] Alan V. Oppenheim, Ehud Weinstein, Kambiz C. Zangi, Meir Feder, and Dan Gauger, "Single Sensor Active Noise Cancellation Using the EM Algorithm", Proceedings, ICASSP-92, March 23-26, 1992, San Francisco, CA.
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- [13] James C. Preisig, "A Robust Adaptive Matched Field Processor Based Upon A Minmax Criterion", Proceedings, ICASSP-91, May 14-17, 1991, Toronto, Ontario, Canada, pp. 1349-1352.
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- [16] Gregory W. Wornell, "Communication over Fractal Channels", Proceedings, ICASSP-91, May 14-17, 1991, Toronto, Ontario, Canada, pp. 1945-1948.
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- [20] John R. Buck, "Implementation and Evaluation of a Dual-Sensor Time-Adaptive EM Algorithm for Signal Enhancement", S.M. Thesis, MIT, Cambridge, MA, August 1991.
- [21] Gregory W. Wornell, "Synthesis, Analysis, and Processing of Fractal Signals", Ph.D. Thesis, MIT, Cambridge, MA, September 1991; also published as RLE Technical Report No. 566, October 1991.
- [22] James C. Preisig, "Adaptive Matched Field Processing in an Uncertain Propagation Environment", Ph.D. Thesis, MIT, Cambridge, MA, January 1992; also published as RLE Technical Report No. 567, January 1992.
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Contributed Presentations

- [24] Alan V. Oppenheim, plenary speaker, "Chaos, Fractals and Signal Processing", Third Biennial Mini Conference on Acoustics, Speech, and Signal Processing, Henderson House, Northeastern University, Weston, MA, April 19, 1991.

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Dr. Neil L. Gerr, Director
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